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EXAMINER

LEROUX, ETIENNE PIERRE

ART UNIT	PAPER NUMBER
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2171

DATE MAILED: 11/05/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,724

Applicant(s)

ROGER B BRADFORD

Examiner

Etienne P LeRoux

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 4, 5, 7 and 8 include the phrase “non-subject terms.” The specification does not support the claimed “non-subject terms.”

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 4-6 and 7-9 are rejected under 35 U. S. C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The following claims lack enablement because the specification does not disclose how to select a non-subject term which is included in the following claims:

- Claims 4 and 5 recite "discerning at least one non-subject term within the vicinity of the implicit position of the sense and assigning to the sense having a discerned implicit position, the meaning associated with the term in the reference collection that correlates best with the discerned non-subject terms closest to the implicit position of the sense.

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- Claim 7 recites "assigning to the occurrence, the meaning, associated with the subject term in the reference collection, that correlates best with non-subject terms closest to the implicit position."
- Claim 8 recites "discerning at least one non-subject term within the vicinity of the implicit position of the sense and assigning to the sense having a discerned implicit position, the meaning, associated with the term in the reference collection, that correlates best with the discerned non-subject terms closest to the implicit position of the sense."

Claims 6 and 9 are rejected for being dependent from a rejected base claim.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-9, 11, 13, 14 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "a method for discerning the presence of at least one sense of a subject term." The scope of the present invention is difficult to determine because examiner maintains the most basic query will reveal at least one sense of the subject term. Related prior art concerns "subject terms" which have multiple meanings. Obviously, searching becomes more complicated if the "subject terms" have multiple meanings. In fact the prior art cited by examiner, i.e., Gallant '507 teaches a method for word sense disambiguation [col 3, lines 21-25].

Claims 1, 3, 14 and 16 recite "determining an implicit position within the vector space of at least one sense of the subject term, the implicit position corresponding to at least one

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determined cluster." The inclusion of "implicit position" does not distinctly claim the present invention. Implicit is defined' as "suggested or to be understood though not plainly expressed." It is unclear where the position of the subject term occurs within the cluster of documents. Claims 4, 5 and 8 include "an implicit position of <i sense of the subject term" and is indefinite for reason(s) similar to the above. Claim 7 includes "implicit position" and is indefinite for reason(s) similar to the above. Claim 10 recites "discerning the implicit position of at least one sense of the subject term corresponding to at least one determined cluster" and is indefinite for reason(s) similar to the above. Claim 12 recites "assigning to the occurrence, the meaning, associated with the subject term, closest to the implicit position of the sense" and is indefinite for reason(s) similar to the above. For purposes of this Office Action the word "implicit" will be ignored.

Claims 4, 5, 7 and 8 include "non--subject terms" which by definition is indefinite for failing to distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 6, 9, 11 and 13 are rejected for being dependent from a rejected base claim.

Claim Rejections - Art Rejection Precluded

Claims 4-9 are not rejected on the basis of prior art for the reasons stated above.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat

No 5,317,507 issued to Gallant (hereafter Gallant '507), as best examiner is able to ascertain.

Claim 1:

Gallant '507 discloses:

- determining at least one cluster of documents within the vector space [Fig 1, item 12 and col 5, lines 35-53],
- each cluster corresponding to a subset of documents within the vector space containing a subject term [Fig 1, item 16],
- determining a position within the vector space of at least one sense of the subject term the implicit position corresponding to at least one determined cluster [Fig 1, items 18/19, Fig 1, item 22].

Claim 2:

Gallant '507 discloses wherein the vector space is a latent semantic indexed vector space [Fig 2, summary vector item 19 and col 5, line 54 through col 6, line 6].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

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skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallant `507 in view of US Pat No 6,269,368 issued to Diamond (hereafter Diamond `368), as best examiner is able to ascertain.

Claim 3:

Gallant `507 discloses:

- performing singular value decomposition and dimensionality reduction on the matrix to form a latent semantic indexed vector space [col 2, lines 43-45]
- determining at least one cluster of documents within the vector space, each cluster corresponding to a subset of documents within the vector space containing a subject term [Fig 1, documents item 12 and col 5, lines 35-53];
- determining a position within the vector space of at least one sense of the subject term, the position corresponding to at least one determined cluster [Fig 1, user queries item 18 and summary vector creation item 19 and Fig 1, selected documents item 22] .

Gallant `507 discloses the elements of the invention as noted above.

Gallant `507 fails to disclose forming an m by n matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j.

Diamond `368 discloses forming an m by n matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j [col 8, lines 53].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gallant `507 to include forming an m by n matrix, where each matrix

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element (i, j) corresponds to the number of occurrences of term i in document j as taught by Diamond '368.

The ordinarily skilled artisan would have been motivated to modify Gallant '507 per the above for the purpose of structuring the database.

Claim 10:

Gallant '507 discloses:

- performing singular value decomposition and dimensionality reduction on the matrix to form a latent semantic indexed vector space [col 2, lines 43-45];
- determining at least one cluster of documents within the vector space, each cluster corresponding to a subset of the [n+x] documents having at least one occurrence of a subject term [Fig 1, item 12 and col 5, lines 35-53];
- discerning the position of at least one sense of the subject term corresponding to at least one determined cluster [Fig 1, items 18/19 and Fig 1, item 22];
- assigning to at least one sense corresponding to at least one discerned position, the meaning of the subject term closest within the vector space to the position of the sense [claim 16, col 15, lines 42-47]

Gallant '507 discloses the elements of the invention as noted above.

Gallant '507 fails to disclose forming an m by [n+x] matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j;

Diamond '368 discloses forming an m by [n+x] matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j [col 8, line 53]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gallant `507 to include forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ; as taught by Diamond `368.

The ordinarily skilled artisan would have been motivated to modify Gallant `507 per the above for the purpose of structuring the database.

Claim 11:

Gallant `507 discloses wherein each document in the reference source corresponds to one meaning [col 2, lines 41-60].

Claim 12:

Gallant `507 discloses:

- performing singular value decomposition and dimensionality reduction on the matrix to form a latent semantic indexed vector space [col 2, lines 45-60]
- discerning the position, within the vector space, of an occurrence of a subject term [col 3, lines 3-10];
- assigning to the occurrence, the meaning, associated with the subject term, closest to the position of the sense [col 3, lines 21-33].

Gallant `507 discloses the elements of the invention as noted above.

Gallant `507 fails to disclose forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ;

Diamond `368 discloses forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j [col 8, line 53]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gallant '507 to include forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ; as taught by Diamond '368.

The ordinarily skilled artisan would have been motivated to modify Gallant '507 per the above for the purpose of structuring the database.

Claim 13:

Gallant '507 discloses wherein each document in the reference source corresponds to one meaning [col 3, lines 21-33].

Claim 14:

Gallant '507 discloses:

- performing singular value decomposition and dimensionality reduction on the matrix to form a latent semantic indexed vector space [col 2, lines 45-60];
- determining at least one cluster of documents within the vector space, each cluster corresponding to a subset of documents within the vector space containing a subject term [col 3, lines 3-10 and col 3, lines 34-42].
- determining a position within the vector space of at least one sense of the subject term, the position corresponding to at least one determined cluster [col 3, lines 21-33].

Gallant '507 discloses the elements of the invention as noted above.

Gallant '507 fails to disclose forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j .

Diamond `368 discloses forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j [col 8, line 53].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gallant `507 to include forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ; as taught by Diamond `368.

The ordinarily skilled artisan would have been motivated to modify Gallant `507 per the above for the purpose of structuring the database.

Claim 15:

Gallant `507 discloses:

- a computer-readable medium [Fig 1, item 20];
- a singular value decomposition and dimensionality reduction module stored on the medium and coupled to the matrix forming module, the singular value decomposition and dimensionality reduction module operative to form a latent semantic indexed vector space from the matrix [col 2, lines 45-60]
- a clustering module stored on the medium the clustering module operative to determine at least one cluster of documents within the vector space, each cluster corresponding to a subset of documents within the vector space containing a subject term [col 2, lines 61-68];
- a sense position determining module stored on the medium, the sense position module operative to determine an implicit position within the vector space of at least one sense of

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the subject term, the implicit position corresponding to at least one determined cluster [col 3, lines 21-41].

Gallant `507 discloses the elements of the invention as noted above.

Gallant `507 fails to disclose forming an m by $[n+x:]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ;

Diamond `368 discloses forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j [col 8, line 53]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gallant `507 to include forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ; as taught by Diamond `368.

The ordinarily skilled artisan would have been motivated to modify Gallant `507 per the above for the purpose of structuring the database.

Claim 16:

Gallant `507 discloses:

- performing singular value decomposition and dimensionality reduction on the matrix to form a latent semantic indexed vector space [col 2, lines 45-60];
- determining at least one cluster of documents within the vector space, each cluster corresponding to a subset of documents within the vector space containing a subject term [col 2, lines 3-10];
- determining an implicit position within the vector space of at least one sense of the

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subject term, the implicit position corresponding to at least one determined cluster [col 15, lines 43-48].

Gallant `507 discloses the elements of the invention as noted above.

Gallant `507 fails to disclose forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ;

Diamond `368 discloses forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j [col 8, line 53]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Gallant `507 to include forming an m by $[n+x]$ matrix, where each matrix element (i, j) corresponds to the number of occurrences of term i in document j ; as taught by Diamond `368.

The ordinarily skilled artisan would have been motivated to modify Gallant `507 per the above for the purpose of structuring the database.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etienne LeRoux whose telephone number is (703) 305-0620. The examiner can normally be reached on Monday - Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic, can be reached on (703) 308-1436.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Patent related correspondence can be forwarded via the following FAX number (703) 872-9306

Etienne LeRoux

October 28, 2003



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